CLAIMS

We claim:

1. Circuitry comprising a filter having one or more filter sections, wherein:

at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells; and

at least one of the gm cells can be configured to have substantially zero transconductance, such that the at least one filter section will oscillate.

2. The invention of claim 1, wherein the at least one filter section is adapted to oscillate at a cutoff frequency of the filter section.

3. The invention of claim 1, wherein the at least one filter section has an input node adapted to receive an input signal for the at least one filter section, an intermediate node, and an output node adapted to present an output signal for the at least one filter section and further comprises:

a first gm cell connected between the input node and the intermediate node;

a first capacitor connected between the intermediate node and a voltage reference;

a second gm cell connected between the intermediate node and the output node;

a second capacitor connected between the output node and the voltage reference;

a third gm cell connected at both ends to the intermediate node; and

a fourth gm cell connected between the output node and the intermediate node, wherein:

the third gm cell comprises a set of switches that enable the third gm cell to be configured to have substantially zero transconductance, such that the at least one filter section will oscillate.

4. The invention of claim 3, wherein the voltage reference is ground.

5. The invention of claim 1, wherein:

the at least one filter section is in a main signal path of the filter; and

the at least one filter section is adapted to be configured to oscillate in order to tune the at least one filter section.

6. The invention of claim 5, wherein each filter section in the main signal path of the filter can be configured to oscillate in order to tune each filter section.

7. The invention of claim 1, wherein:

the filter comprises a main signal path having one or more filter sections;

the at least one filter section is not part of the main signal path;

the at least one filter section is a replica of at least one filter section in the main signal path; and

the at least one filter section is adapted to be configured to oscillate in order to tune the at least one filter section in the main signal path.

8. The invention of claim 1, wherein:

the at least one filter section comprises tuning circuitry adapted to tune the at least one filter section; and

the tuning circuitry is adapted to store tuning control information for the at least one filter section such that the at least one filter section can be tuned intermittently.

9. The invention of claim 8, wherein information about the tuning of the at least one filter section is used to tune one or more other filter sections in the filter.

10. The invention of claim 1, wherein the at least one filter section is adapted to oscillate without relying on phase-locked loop circuitry.

11. The invention of claim 1, wherein the one or more filter sections are biquadratic filter sections.

12. The invention of claim 1, wherein the one or more filter sections are connected to form a ladder structure.

13. A method for operating a filter having one or more filter sections, wherein:

at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells;

the method comprising configuring at least one of the gm cells to have substantially zero transconductance, such that the at least one filter section will oscillate.

14. The invention of claim 13, wherein the at least one filter section oscillates at a cutoff frequency of the filter section.

15. The invention of claim 13, wherein:

the at least one filter section has an input node that receives an input signal for the at least one filter section, an intermediate node, and an output node that presents an output signal for the at least one filter section;

the at least one filter section further comprises:

a first gm cell connected between the input node and the intermediate node;

a first capacitor connected between the intermediate node and a voltage reference;

a second gm cell connected between the intermediate node and the output node;

a second capacitor connected between the output node and the voltage reference;

a third gm cell connected at both ends to the intermediate node; and

a fourth gm cell connected between the output node and the intermediate node, wherein:

the third gm cell comprises a set of switches that enable the third gm cell to be configured to have substantially zero transconductance, such that the at least one filter section will oscillate.

16. The invention of claim 13, wherein:

the at least one filter section is in a main signal path of the filter; and

the at least one filter section is configured to oscillate in order to tune the at least one filter section.

17. The invention of claim 13, wherein:

the filter comprises a main signal path having one or more filter sections;

the at least one filter section is not part of the main signal path;

the at least one filter section is a replica of at least one filter section in the main signal path; and

the at least one filter section is configured to oscillate in order to tune the at least one filter section in the main signal path.

18. The invention of claim 13, wherein:

the at least one filter section comprises tuning circuitry that tunes the at least one filter section; and

the tuning circuitry stores tuning control information for the at least one filter section such that the at least one filter section can be tuned intermittently.

19. The invention of claim 18, wherein information about the tuning of the at least one filter section is used to tune one or more other filter sections in the filter.

20. The invention of claim 13, wherein the at least one filter section oscillates without relying on phase-locked loop circuitry.